THE
USE of ASTRONOMY
IN
HISTORY and CHRONOLOGY
EXEMPLIFIED IN
An Inquiry into the Fall of the Stone into the ÆGOSPOTAMOS;

Said to have been foretold by ANAXAGORAS.

In which is attempted to be ſhewn, that ANAXAGORAS did *not foretell* the *Fall* of that STONE; but the SOLAR ECLIPSE in the firſt Year of the PELOPONNESIAN War.

That what he *ſaw* was a COMET at the Time of the Battle of SALAMIS: And that this Battle was probably fought the Year before Chriſt 478; or two Years later than it is commonly fixed by Chronologers.

Costard. K.

——— credimus altos
Defeciſſe amnes, epotaque flumina Medo
Prandente ——— Juv. Sat. x.

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MDCCLXIV.

MVSEVM
BRITAN
NICVM

TO THE RIGHT HONOURABLE

ROBERT

Earl of NORTHINGTON,

Lord High Chancellor of GREAT BRITAIN,

This ſmall Tract is moſt gratefully

inſcribed by

His LORDSHIP's

Moſt dutiful

and moſt obliged

humble Servant,

G. COSTARD.

THE

USE of ASTRONOMY,

IN

HISTORY and CHRONOLOGY

EXEMPLIFIED.

IT is a judicious Obſervation of a very eminent Hiſtorian "that it is highly difficult to arrive at "the Truth of paſt Tranſactions; as Reports "are uſually tranſmitted from Hand to Hand, "without any one's being at the Trouble to examine "them (*a*)".

UPON this Principle, no doubt, many falſe and fictitious Stories, that have been obtruded on the World, may be accounted for; which, having never been queſtioned, have gained Strength and Credibility by Time and Preſcription. Some, it may be, imperfect-

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(*a*) *Thucyd.* Pag. 16. Edit. *Waſs.*

ly related at firſt, or received but by halves, have ſoon been diſguiſed with ſuch additional Circumſtances, as have rendered the whole Narration impoſſible, or abſurd. Nor is it at all ſurpriſing, when this hath been the Caſe, if this very Abſurdity itſelf ſhould be a Defence againſt Enquiry; few perhaps thinking it worth their Pains to clear up the Truth, fewer having Abilities to do it, or knowing which Way to attempt it.

If theſe Reflections are true in general, we ſhall find them no leſs ſo, perhaps, in one very particular Inſtance, which is that of a *Stone* ſaid to have fallen into the *Agoſpotamos*, and whoſe fall is farther ſaid to have been foretold by *Anaxagoras* (*b*).

That the meer falling of a Stone, however large, into a River, ſhould be looked on as a Wonder, much more that it ſhould be ſo carefully tranſmitted down Poſterity, in the Manner that this hath been, is ſurpriſing indeed. But that it's *fall* was capable of being *predicted* by any *human Skill*, or Sagacity whatever, may be ſet down as plainly *impoſſible*. Something therefore, moſt probable, lies concealed at the bottom of this Story, not hitherto ſufficiently diſcovered; and what that is ſhall be the Buſineſs of the following Papers to examine.

(*b*) Laert. in Vit. *Anaxag*

The Account given of this Fact by *Pliny*, (*c*) is this: " Celebrant *Græci* (ſays he) *Anaxagoram Clazomeni-* " *um*, *Olympiadis* Septuageſimæ octavæ ſecundo Anno, " prædixiſſe, *Cæleſtium Literarum Scientia*, quibus die- " bus ſaxum caſurum eſſet è ſole: idque factum " interdiu in *Thraciæ Parte*, ad Ægos Flumen. " Qui Lapis (adds he) etiam nunc oſtenditur, mag- " nitudine vehis, colore aduſto; *Comete* quoque illis " Noctibus *flagrante*."

ARISTOTLE (*d*) hath the ſame Obſervation on the appearance of a *Comet* at the Time when this Stone fell. But when he would have a Stone of ſo ponderous a Size to be lifted up, and carried thro' the Air by *a Wind*, it is only ſolving *one Wonder* by a *greater*.

DAMACHUS, in *Plutarch*, (*e*) another Author that mentions this Story, ſays, " that before the fall " of this Stone, for 75 Days together, there was ſeen " in the Heavens a large fiery Body, like a *flame-co-* " *loured Cloud*, not moving ſlowly, but having a Va- " riety of broken Motions, ſuch as Things have that " are carried uncertainly by the Waves: That many " fiery Splinters came from it, and a Train of Light " reſembling that of ſhooting Stars."

(*c*) Nat. Hiſt. L. ii. c. 58. (*d*) *Meteorolog*. L. i. c. 7. (*e*) In *Vita Lyſandri*.

THOUGH this Account is undoubtedly far from being exact; yet, when compared with what was above remarked from *Ariſtotle* and *Pliny*, it plainly ſuggeſts, that the *large fiery Body like a Flame coloured Cloud* muſt have been the *Comet* mentioned by both of them, and that this *Comet* had a ſenſible Diameter. The *Splinters*, and the *Train of Light* iſſuing from it, will readily be allowed to have been its *Tail*, by all that ſaw and remember the Comet of 1743. As to the irregularity of the Motion here deſcribed, that, I ſuppoſe, may well be attributed to the Inaccuracy of Obſervation, or, what is more probable, the Want of Care and Fidelity in the Hiſtorians, through whoſe Hands this Account hath paſſed (*f*).

FROM the Whole of this obſcure Relation however, I think we may gather thus much, that it contains *three* diſtinct Facts.—the *Fall* of the *Stone* into the *Ægoſpotamos*—the *Appearance* of a *Comet*—and ſome *Prediction* or other, whatever it was, of *Anaxagoras*. That theſe *three Facts* have hitherto been all

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(*f*) Immo non vereor pronunciare (ſays *Hevelius*) nullum prorſus Cometam ex illis omnibus qui ab initio mundi à Chronologis, Hiſtoricis, Philoſophis ac Mathematicis annotati & obſervati ſunt (quorum tamen numerus obſervatorum ab Anno ante Chriſtum 480 huc uſque 156 minimùm explet) unquam apparuiſſe, qui tales inſolentes & abnormes edidiſſet Anomalias. *Cometograph.* p. 151. And that *Plutarch* himſelf did not give entire Credit to this Relation appears from what he adds ὁτι μεν ȣν ευγνομονων ὁ Δαμαχος ακροατων δειται δηλος εϛιν.

along confounded together—and that this Confuſion may, in a good Meaſure at leaſt, be aſcribed to their happening nearly at the ſame Time.

As to the Fall of the Stone, we ſee, it is conſidered by *Damachus* himſelf, as diſtinct from what he calls the *Flame-coloured Cloud,* and will give but little Trouble in accounting for it. When he ſays, "that "the Inhabitants of the Neighbourhood, as ſoon as "they recovered from their Fright, came together "to the Place when there Stone fell, but diſcovered *no* "*Signs* of Fire;" he muſt mean, I ſuppoſe, *immediately*; or that they found no *viſible Fire* burning. For upon Examination, the Stone, if *Pliny* ſays true, was *Colore aduſto.*

The *Ægoſpotamos* was a River in, what was called by the *Ancients*, the *Thracian Cherſoneſus*, being joined to the Continent only by a ſmall Neck of Land. The Country is rocky and mountainous, as we learn from both *Herodotus* (*g*) and *Strabo* (*h*). This Stone therefore might be thrown off from ſome neigbouring Hill into the River, by ſome violent Exploſion, like that by which *another Stone* was thrown from the *Alps*, in the Time of *Gaſſendus*, and then kept, as he ſays, at *Aix in Provence* (*i*).

(*g*) Pag. 254. Edit. *Gronov.* (*h*) Lib. vii. Pag. 474.

(*i*) Pauca adjiciam de lapide quodam inſigni, qui *Aquis Sextiis* aſſervatur in *Borilliano* Cimeliarchio, quando & fulmineus habetur, & hoc nomine admodum percrebuit. Annus fuit M.DC.XXXVII.

IN this therefore there is nothing miraculous, as will be readily allowed by ſuch as are in the leaſt acquainted with *Chymical* Experiments. For *Chymical* Experiments are nothing more than an *artificial* Combination and mixture of Subſtances, and in ſuch a Manner, as is frequently, though imperceptibly, done by *Nature* herſelf. And as like Cauſes will always produce like Effects, we may fairly pronounce of the hidden Operations of the *one* from what we ſee daily performed by the *other*.

HEAT, for Inſtance, is the ſame whether natural or artificial, and will, under certain Circumſtances, produce *Fermentation*. That again *may*, and frequently *doth* produce a ſtrong *Elaſtic* Vapour, which, if confined, will force a Paſſage wherever it can, and carry along with it every Thing that oppoſeth it. The Effects of Gun-powder are known to every one. The chief Ingredients in it are *Sulphur* and Nitre. But *Sulphur*, when powdered and added to an equal Quan-

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ac Dies *Novembris* XXIX, cum ſub matutinam Horam X, ille decidit in montem *Vaſſonem*, *Alpium* maritimarum unum, ac inter *Gulielmos* & *Pedonem* oppida ſitum. Erant tunc omnia Nive obducta; erat ſereniſſimum Cœlum, duoque fuerunt præſertim viri, unus Internuncius, alter in Pago montano degens, qui eſſe potuerint oculati Teſtes.—Deprehenſus eſt Lapis qui deciderat, quique effoſſus viſus eſt *vitulino Capiti* par, ſed nonnihil rotundior, & magis ad formam Capitis humani accedens, *Color metallicus*, ſubfuſcus; exquiſita durities, pondus vulgarium Lapidum gravitatem exſuperans. *Gaſſend. Op. Tom.* ii. *Pag.* 96.

tity of filings of Iron, and with a little Water made into a Paſte, in 5 or 6 Hours grows too hot to be touched, and emits a *Flame* (*k*).

There is a natural Sulphur abounding in many Places; (*l*) and Iron, it is well known, is almoſt every where to be met with. It is found even in all Parts of Animals (*m*) whether Fluids or Solids, as Milk, Urine, Blood, Fat, Bones, Fleſh. Moſt Countries of *Europe* produce Mines of it, as *England, France, Germany, Poland, Norway*, &c. That it contains in itſelf great Quantities of Sulphur appears from the Sparks it emits, when ignited and beat by the Smith's Hammer; thoſe Sparks being owing to the Sulphur it contains, as no ſuch Thing is obſervable in any other Metal whatever.

The *Weight* of the Stone then mentioned by *Gaſſendus* plainly ſhews, that it contained a large Quantity of *Metal*; and the *Colore aduſto*, in that of *Pliny*, beſpeaks it to have lain, at leaſt, in a *ſulphureous* Matrix. If therefore the Snow melting on the *Alps*, or any Hill near the *Ægoſpotamos*, found its Way to a Mixture of Iron and Sulphur, as is not impoſſible, upon the Principles here laid down, it would have been capable of throwing off a Piece of Rock as large

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(*k*) *Newton's* Optic. Pag. 354. (*l*) *Newton's* Optic. Pag. 359. *Boerhaave's* Chymiſt. Vol. I. Pag. 114. (*m*) *Boerhaave*. Chymiſt. Vol. I. P. 95. (*n*) *Newton*. Optic. pag. 354.

as either of thoſe mentioned by *Gaſſendus*, or *Pliny* (*n*).

BUT though what hath been here ſaid very eaſily and naturally accounts for the *Fall of the Stone*; yet that *no Skill*, whether natural or acquired, could foretell *ſuch an Event*, is too plain to need any Proof. Whatever, therefore, *Anaxagoras foretold*, it certainly was not this. *Charimander*, in *Seneca*, (*o*) ſays only that "*Anaxagoras ſaw* a great and unuſ- "ual Light in the Heavens, of the Bigneſs of a *large Beam*, and that it ſhone for many Days together." This, if one may gueſs from the Similarity of the Deſcription with that above, ſeems to have been nothing elſe but the *Tail* of the *Comet* already mentioned by *Ariſtotle* and *Pliny*. But this is an *Obſervation*, and not a *Prediction*.

IF *Plutarch* (*p*) ſays true, *Anaxagoras* foretold, "that ſometime or other, one of the heavenly Bodies "would be *ſhook out of its Place*."

FROM this Account, one would be apt to imagine, that *Anaxagoras* looked on the Heavens as a Stone Vault over Head, in which the *fixt Stars* were placed as in a Concave Surface: That either by Length of Time, or a ſudden Stoppage of their *apparent* diurnal

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(*n*) *Newton*. Opic. Pag. 354. (*o*) Nat. Quæſt. L. vii. c. 5.
(*p*) In Vit. *Lyſand.*

Motion, they might poſſibly ſometime or other fall to the Earth.

WHAT were the real Opinions of the old *Greek* Philoſophers is many times hard to ſay. The Authors who have undertaken to give us an Account of them appear, from many Inſtances, to have been no ways equal to the Taſk. As far, however, as they can be relied on, it ſeems as if *Anaxagoras* ſuppoſed the heavenly Bodies, particularly the Sun and Moon, to be *material*; and that Eclipſes of theſe Luminaries, in thoſe Days dreaded as Omens and Prodigies, were owing to *regular* and *ſtated* Cauſes (*q*).

ANAXAGORAS was 72 Years old when he died. He was born according to *Apollodorus* and *Demetrius Phalereus Olymp*. LXX. 1. and began to teach Philoſophy at *Athens*, when he was but 20 Years of Age, *Olymp*. LXXV. 1. when *Callias* was *Archon*; the very Year in *Xerxes* is ſuppoſed to have come into *Europe* (*r*).

THOUGH it is hardly probable that *Anaxagoras* ſhould begin teaching Philoſophy when he was but 20 Years old, yet it may well enough be the Year of of *Xerxes*' Expedition from *Sardis*. And as *Anaxagoras* continued teaching for 30 Years after this, we

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(*q*) Vid. *Plato* Apolog. *Socrat.* & *Plutarch.* in Vit. *Periclis.*

(*r*) Diog. Laert. in Vit. *Anaxag.*

ſhall find from Hiſtory, within that Period, both a remarkable *Comet* and *Eclipſe*. Conſequently we ſhall, with good Probability, diſcover the one that he *ſaw*, and the other that he *foretold*.

HERODOTUS (*s*), as he hath been commonly underſtood, ſays, that *Xerxes* in the 5th Year of his Reign ſpent the Winter at *Sardis*, and the next Year in the Spring paſſed over the *Helleſpont*. This was, according to *Dionyſius Halicarnaſſenſis* (*t*), the Year when *Cæſo-Fabius* was the 2d Time Conſul elect by the *Patricians*, and *Sp. Furius* by the *Plebeians*, *Olymp.* LXXV, and in the *Archonſhip* of *Callias*, as before. And with this agrees *Eratoſthenes* in *Clemens Alexandrinus* (*u*), who reckons 297 Years from the *firſt Olympiad* to this Paſſage of *Xerxes* into *Greece*.

ACCORDING to *Polybius* (*x*), the League between the *Romans* and *Carthaginians* was made 28 Years, or 7 whole Olympiads, before this Expedition of *Xerxes*. The *firſt Conſuls* are commonly ſuppoſed to have been created A. U. C. 244. and before *Chriſt* 509. And 28 Years after this brings us to A. U. C. 272. and the Year before *Chriſt* 481.

THUCYDIDES (*y*) ſays, it was 10 Years after the Battle at *Marathon*; and that Battle, according to *A.*

(*s*) Pag. 395. Edit. Gronov. (*t*) Pag. 559. See Diod. Sicul. l. xi. p. (*u*) Pag. 402. Edit. *Potter*. (*x*) Lib. iii. (*y*) Lib. i. c. 18.

Gellius (z) and *Sulpicius Severus* (*a*), was fought about A. U. C. 260. and 10 Years afterwards was A. U. C. 270, and before Chriſt 483; or if we allow 3 Years for the *non longè amplius* of *A. Gellius*, the Year before Chriſt 480.

In *Ptolemy's Syntaxis*, there is a *Lunar Eclipſe* ſet down in the 31ſt Year of *Darius Hyſtaſpes*. He reigned 36 Years compleat according to *Ptolemy's Canon*, and died *An. Nab.* 262, and was ſucceeded by his Son *Xerxes*, the Year following. The 5th Year of *Xerxes* therefore was *An. Nab.* 267, and the Year after, when he came into *Greece*, was *An. Nab.* 268, and the Year before *Chriſt* 480. And with this Computation agree *Petavius* (*b*), and *Archbiſhop Uſher* (*c*).

But when this Expedition of *Xerxes* is thus fixed to the Year before Chriſt 480, it is evident that this hath been only by comparing that *Æra* with the *Olympiads* and *Conſular Faſti*. A Method, perhaps, hardly preciſe enough for the Purpoſe, though in moſt Caſes the beſt that can be had.

For that it was not the Year before *Chriſt* 480, there is great room to ſuſpect, from that *extraordinary Darkneſs* mentioned by *Herodotus* (*d*), when *Xerxes* moved from *Sardis*. " For early in the Spring, as

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(z) Noct. Attic. l. xvii. c. 21. (*a*) Hiſt. Sac. l. ii. (*b*) Doct. Temp. l.x. c. 24. (*c*) Under A. P. J. 4234. (*d*) Pag. 395. edit. *Gronov.*

" he was beginning to march, the *Sun* on a ſudden,
" ſays *Herodotus*, diſappeared, and tho' the Sky was
" *free from Clouds*, yet it became as *dark as Night*.
" That *Pythius* the *Lydian* was ſo terrified at this
" Darkneſs, that he deſired *Xerxes* to diſmiſs his
" eldeſt Son from ſerving any longer in his Army.
" That *Xerxes* was ſo enraged at the Requeſt, that he
" ordered the young Man to be cut in Pieces,
" and the Army to march between the Parts of the
" Body."

HERODOTUS, is ſaid (*e*) to have been 53 Years old at the Beginning of the *Peloponneſian* War, and therefore was born but a little before the Arrival of *Xerxes* into *Europe*. Being then an *Ionian* himſelf, we cannot well ſuppoſe him to have been miſtaken or miſinformed in ſo remarkable a Fact. And yet it is certain, that in the Spring of the Year before *Chriſt* 480, this *Darkneſs* could not have been cauſed by any *regular* Eclipſe, as in the Spring of that Year there was *no Solar* Eclipſe at all.

As to the Eclipſe the Year before this, *April* the 19th, beſides that it was too late in the Spring for the Circumſtances of the Hiſtory, as will appear hereafter, it was, according to *Petavius* (*f*), none at all, or at moſt, according to *Buntingus*, (*g*) of 3 Digits, and there-

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(*e*) Aul. Gell. Noct. Attic. l. xv. c. 23.

(*f*) Doct. Temp. l. x. c. 24.

(*g*) *Kepler*. Aſtron. Part. Optic. pag. 291.

fore could not, as *Herodotus* ſays it did, ***turn the Day into Night***.

In the Year after this, or 479 before Chriſt, there was indeed a Solar Eclipſe. The Time of the mean Conjunction was *Feb.* $26^{d}.\ 16^{h}.\ 17'$. when the Place of the Luminaries was, $11^{s}.\ 3^{\circ}.\ 47'$.

And the Moon's Latitude North $1^{\circ}.\ 24'.\ 44''$.

But this was too early in the Morning to be viſible at *Sardis*. And as to the Eclipſe in the next Month of *March*, the 29th ſame Year, I find the Time of the true Conjunction at *Greenwich* was 40′ paſt 1 of the Clock in the Afternoon. The Place of the Luminaries was $2^{\circ}.\ 29'.\ 30''$. of ♈ and the Moon's Latitude *South* $1^{\circ}.\ 6'.\ 21''$. So that neither will this Eclipſe anſwer the Purpoſe at *Sardis*.

The Technical Chronology of theſe Times can hardly be ſuppoſed to err more than 10 Years. But, by many Calculations, I find that no Eclipſe in the Years before *Chriſt* 473, 474, 475, 476, will at all anſwer our Purpoſe. In the Year 477, indeed the Sun was eclipſed in *February*. The Time of the mean Conjunction at *Greenwich* was, $4^{d}.\ 22^{h}.\ 58'.\ 8''$. The Place of the Luminaries was, $10^{s}.\ 11^{\circ}.\ 48'.\ 26''$.

And the Moon's Latitude North, $4'.\ 11''$.

Semidiameter of the Sun	$16'.\ 13''$.
Semidiameter of the Moon	$14'.\ 47''$.

Moon's Horizontal Parallax $53'.\ 59''$.

BUT neither will this Eclipſe, on account of the Moon's Parallax, be at all ſerviceable to us, at *Sardis*.

THE only Eclipſe then that can be of uſe to us in the preſent Inquiry, and within the Compaſs of theſe 8 Years, is an Eclipſe in *February* the Year before this, or the Year before *Chriſt* 478.

THIS Eclipſe ſhall be taken Notice of hereafter; in the mean Time it muſt be obſerved, that the Difficulty of finding an Eclipſe to the Purpoſe hath induced ſome Perſons to ſuſpect, that it was not cauſed by the Interpoſition of the Moon, in the uſual Manner of Solar Eclipſes, but by ſome large Cometic Body or other (*h*). And this, perhaps, they have the rather been inclined to ſuppoſe, as *Pliny* (*i*) aſſures us, that a *Comet* made its Appearance the very Year that the Battle at *Salamis* was fought. He calls it *Ceratias*, or *horned*. Theſe Horns, it may be, were not produced till it had been ſufficiently heated at its *Perihe-*

(*h*) *Petavius*, in the Place above cited, ſays, Fuit hoc *ſingulare quoddam* & *extraordinarium Portentum*, ſi vera ſcripſit *Herodotus*. See Mr. *Des Vignoles*, in the *Mem. des Acad.* Vol. X. pag. 375, and Mr. *Whiſton's* Six Diſſert. pag. 165. *Kepler* ſays, in the Place above quoted, Suſpicor igitur lapſam eſſe Famam, eo quod *Xerxes bis* fortaſſe Sardibus iverit. But this is only a Suſpicion.

(*i*) *Ceratias*, Cornus ſpeciem habet, qualis fuit cum *Græcia* apud *Salamina* depugnavit. *Nat. Hiſt.* l. ii. c. 25.

lion, which it might not arrive at till ſome Months after *Xerxes* had left *Sardis*. Having therefore, before that Time, no Marks to diſtinguiſh it by, it would paſs unſuſpected and unobſerved. But if when *Xerxes* moved from *Sardis* it was coming down, and near to its deſcending Node—if it paſſed between the Sun and the Earth with an *apparent* Diameter as big as the Moon's, in proper Degrees of *Anomaly*, it would have the ſame Effect with her under the like Circumſtances, and would have been capable of *turning the Day into Night*.

WHETHER this be ſo or not, yet as *Anaxagoras* was 20 Years old at the Battle of *Salamis*, as ſeen before, and if at that Time there really was a *Comet*; we may fairly be ſaid to have found the *Comet* which he *ſaw*, as well as to have *accounted* for the *Fall* of the *Stone*.

THAT ſome Comets have no Tails at all, or very ſmall one's, is now known (*k*). *Seneca*, from *Poſidonius*, mentions *one* that appeared near the Sun when he had been eclipſed (*l*). And ſuch, perhaps, was

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(*k*) Philoſoph. Tranſact. N°. 422.

(*l*) Nihil enim abſurdi (ſays *Hevelius*) ſæpius ſub Radiis ſolaribus Sidera crinita deliteſcere, quæ niſi motu quodam, aut velociori, aut ſole contrario, ſe ex illius *Radiis* extricent, ſive Tempore Eclipſeos Solis emergant, nullo modo ad noſtrum veniant aſpectum, ſecundum illud *Senecæ*, l. vii. cap. 20. Nat. Quæſt. "Multos, inquit, Cometas "non videmus, quod obſcurantur *Radiis* Solis: quo deficiente, quendam Cometam apparuiſſe, quem Sol vicinus obtexerat, Poſidonius "tradit. *Hevel. Cometograph.* p. 550.

that *round well-defined Spot* (*m*) obſerved in the Sun, *September* the 23d 1730.

THAT Comets may have very *large apparent* Diameters too is certain. That of 1652, according to *Hevelius* (*n*), had, *December* the 20th, a Diameter *little leſs* than that of the *Moon*. It is the 13th in Dr *Halley's* Catalogue of Comets, who places its *Aſcending Node* ♒. 28°. 10′. and makes the Time of its *Perihelion*, *November* 2d. 15h. 40′. That this however was the Comet itſelf, is more than can be aſſerted.

IN the mean Time then as a *Darkneſs*, cauſed in ſuch a Manner as this, is unexampled in any Hiſtory beſides—and as the Technical Chronology by *Olympiads*, the *Conſular Faſti*, and even *Ptolemy's Canon* is not ſo accurate that it may be depended on to a Year or two; one would rather ſuppoſe, that it was a regular *Solar Eclipſe* in the natural Way.

AND this ſeems to have been *Kepler's* Opinion. Jure credideris, ſays he, *Prodigium* in Sole factum inſpectante toto exercitu—*niſi Biennio* poſt hunc *Xerxis* Tranſitum, Calculus *Prutenicus*, maximam Solis Eclipſin oſtenderet, *hora* poſt meridiem *prima* in *Aſia*, eamque Die 17 *Februarii*, in 24°. & ſic *primo Vere*; quod *Herodoti* Recenſioni congruit (*o*).

(*m*) *Whiſton's* Six Diſſert. p. 168. (*n*) Cometograph. pag. 323. (*o*) Aſtron. Part. Optic. pag. 219.

THIS is the Eclipſe already ſpoken of: but before I come to make any further Uſe of it, or to ſhew how well it agrees with the Circumſtances of the Hiſtory, it will not be improper to add ſomething on the remaining *Fact*, or what it was in reality that *Anaxagoras foretold*.

IN the confuſed Account delivered above by *Pliny*, we have ſeen, that this Prediction of *Anaxagoras*, whatever it was, is aſcribed to his Skill in *Aſtronomy*. But the only Things that a Skill in Aſtronomy would enable him to foretell, were *Eclipſes* of the *Sun* and *Moon*.

THAT there was ſome Method extant at that Time, whereby the Aſtronomers could predict ſuch Phenomena, appears from the famous Eclipſe mentioned by *Herodotus* (*o*), and ſaid to have been foretold by *Thales*.

BY what Method this was done is not very well known; as there is no Reaſon to think, from any Thing that the Ancients have delivered, that in thoſe Days there were any *Tables* of the *Solar*, or *Lunar* Motions. What ſeems the moſt probable is, that it was by what hath been ſince called the *Chaldean Saros*, or the *Plinian Period*; which is nothing more

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(*o*) Pag. 29.

than a *Cycle* of 18 Years and a few odd *Days*, *Hours*, *Minutes*, and *Seconds*.

THIS Period was greatly eſteemed by the late excellent Dr. *Halley* (*p*). " For obſerving, ſays he (*q*), " the Period of Lunar Inequalities, which is performed in 18 Years and 11 Days, or 225 *Lunations*, it " is found, that the Returns of the *Eclipſes*, and other " *Phenomena* of the *Moon's* Motion, are very regularly " performed; ſo that whatever Error is found in a " *former Period*, the ſame is repeated again in a *Second*, under the like Circumſtances of the ſame " Diſtance of the *Moon* from the *Sun* and *Apogæon*."

AND upon this Principle it was, that, from an Eclipſe of the *Sun* obſerved at *London* and *Dantzick*, *June* the 22^{d} A. D. 1666, he was enabled to *predict* another 18 Years afterwards, or *July* the 2^{d} 1684, with an Exactneſs that is very ſurpriſing. For, by *Prediction*,

The Beginning was to be at *London* at	2^{h}. 10′.
and the End at	4. 28′.
By *Obſervation* the Beginning was at	2. 10′.
and the End at	4. 27′.

BUT though this is a Preciſion which the Ancients may be ſuppoſed incapable of, for want of a *true*

(*p*) Philoſoph. Tranſact. N°. 194. (*q*) At the End of *Street's* Aſtron. Carolin. Edit. 2.

Theory of the *Moon's Motion*; yet long *Experience* and *Obſervation* might have taught them this *Period*, in a groſſer Manner at leaſt. That it was in ſome Sort known to *Meton*, a few Years after the Time of the Expedition we are now ſpeaking of, is certain (*r*). And as he might probably be inſtructed in it by *Anaxagoras* himſelf, it will ſuggeſt to us, perhaps, the very *Eclipſe* that he *foretold*.

For in the *firſt* Year of the *Peloponneſian* War there was ſo great an Eclipſe of the Sun, that, according to *Thucydides* (*s*), ſome *Stars appeared*. And *Valerius Maximus* (*t*) ſays further, "that to quiet the Minds "of the People, who were greatly terrified, *Pericles* "was obliged to explain to them what he had learned from his Preceptor *Anaxagoras*, relating to the "Cauſe and Nature of Eclipſes."

It is not improbable then, that *Anaxagoras* had, to his Scholars, not only treated of *Eclipſes* in *general*; but had likewiſe, in the ſame Manner as *Thales* had done before, *predicted* this to them in particular.

And what makes this the more probable is the very Paſſage quoted above from *Pliny*, who dates this Prediction of *Anaxagoras*, whatever it was, *Olymp.* LXXVIII. 2.

(*r*) *Dodwel* de Cycl. Vet. Diſſert. I. Gemin. in Petav. Uranolog. pag. 31, &c. (*s*) Pag. 115. Edit. *Waſſe*, and *Plutarch* in Vit. *Pericl.* (*t*) Lib. viii. c. 11.

For the 1ſt Year of the *Peloponneſian* War was the Year before Chriſt 431 : To this add *two Plinian* Periods, or 36 Years, and we ſhall have the Year before *Chriſt* 467. And again, on the other Hand, if the Year before *Chriſt* 480, as before obſerved, was Olymp. LXXV. then *three* more *Olympiads* will give us Olymp. LXXVIII. the 2d Year of which likewiſe was the Year before *Chriſt* 467. And this was the Year when, according to *Pliny*, *Anaxagoras* foretold the *Fall of the Stone*.

That *Anaxagoras* could not *foretell* the *Fall* of the *Stone*, hath been obſerved already. And if it was the Solar Eclipſe in the 1ſt Year of the *Peloponneſian* War that he really *foretold*, then there is ſome Miſtake in *Pliny's* Date of Olymp. LXXVIII. 2.

For if we take *three* of theſe Periods backwards from the *firſt* Year of the *Peloponneſian* War, and to each add $10^{d}. 7^{h}. 43'. 15''$. when there are 5 *Leap* Years in the Period; and $11^{d}. 7^{h}. 43'. 15''$. when there are only 4 *Leap* Years in it; we ſhall find that they commenced the Year before *Chriſt* 485, in the *July* of which there was a *Solar Eclipſe*. The *mean* Time of the Conjunction at *Greenwich* was *July* $1^{d}. 7^{h}. 1'$. from whence the following Periods will ſtand thus :

Sun

Sun eclipſed *July*	485^{y}.	+	01^{d}.	07^{h}.	$01'$.	$00''$.
	18.	+	11.	07.	43.	15.
Sun eclipſed *July*	467.	+	12.	14.	44.	15.
	18.	+	11.	07.	43.	15.
Sun eclipſed *July*	449.	+	23.	22.	27.	30.
	18.	+	10.	07.	43.	15.
Sun eclipſed *Auguſt*	431.	+	3^{d}.	06^{h}.	$10'$.	45.

IN D^{r}. *Halley's* Tables, the Difference in Time between the *Meridians* of *London* and *Athens* is 1^{h}. $35'$. $30''$; conſequently the firſt of theſe Eclipſes was not viſible at *Athens*, and ſo could be of no Service to *Anaxagoras* in *predicting* another in the ſame Series.

THE ſame may be ſaid likewiſe of the *ſecond* Eclipſe, *July* 467. as being too early in the Morning.

THE third Eclipſe, we ſee, was *July* 23^{d}. 22^{h}. $27'$. $30''$. but, by D^{r}. *Halley's* Tables, the Time of the mean Conjunction at *Greenwich* was 23^{d}. 19^{h}. $48'$. $17''$.

THE Place of the Luminaries was 3^{s}. 24°. $33'$. $00''$.
Diameter of the Sun 31. $51''$.
Diameter of the Moon 32. $32''$.
Moon's Latitude North 41. $7''$.
The Time of the viſible Conjunction at *Athens* was *July*

July the 24th at 8^{h}. 43′. A. M.
The Beginning 7. 26′.
The End 10. 10′.
Digits eclipſed 11. 15′.

BUT if the Year before *Chriſt* 467 was *Olympiad* LXXVIII. 2. as obſerved before, then 18 Years after this will be Olymp. LXXXII. 2. and the Year before *Chriſt* 449: when (we ſee upon what Grounds) *Anaxagoras* might, and probably *did*, *foretell* the *Solar* Eclipſe in the Year before Chriſt 431. And as there is no Reaſon to think that he could do this any other Year about this Time, it is highly probable, that this was the Year that he did ſo; and therefore that, inſtead of Olymp. LXXVIII. 2. as it is read in *Pliny* at preſent, it ſhould be altered to *Olymp.* LXXXII. 2.

FROM what hath been hitherto laid down then it appears, that *Anaxagoras* did not *foretell* the *Fall* of the *Stone* into the *Ægoſpotamos*, but a *Solar Eclipſe*; and that he ſaw, not a *Flame-coloured* Cloud, but, the *Comet* that appeared about the Time that the Battle was fought at *Salamis*. That Battle, as obſerved before, is commonly fixed to the Year before *Chriſt* 480. But as no *Solar Eclipſe* happened in the Spring of that Year, to cauſe the *Darkneſs* mentioned by *Herodotus*; *Kepler*, as we have ſeen, is more inclined to attribute that Darkneſs to the *Solar Eclipſe* that fell out in *February*, the Year before *Chriſt* 478.

AND that this was the Year of that Darkneſs, and conſequently of *Xerxes's* Paſſage into *Europe*, and the Battle at *Salamis*, will not ſeem improbable, when we have examined a little the Hiſtory of that Time.

IN the 4th Year after the Battle at *Marathon*, according to *Herodotus* (*u*), the *Egyptians* revolted from the *Perſians*; and the Year after that *Darius* died (*x*). This, as before obſerved, was *An. Nab.* 262. In the *ſecond* Year after his Death (*y*), his Son *Xerxes* ſent an Army to reduce them. This therefore muſt have been *An. Nab.* 264. The Hiſtory of this War is quite unknown; but we can harldly ſuppoſe that Country was intirely reduced, and ſettled enough for *Xerxes* to think of engaging in a new War with the *Greeks* till the Year following, or *An. Nab.* 265. From the Conqueſt of *Egypt*, for *full four* Years (*z*), *Xerxes* was employed, according to *Herodotus*, in raiſing his vaſt Army, and in the Spring of the *fifth* ſet out from *Sardis*. This therefore muſt have been *An. Nab.* 270, or the Year before *Chriſt* 478, in the *February* of which was the great *Solar Eclipſe* mentioned by *Kepler* above.

BUT if this was the Year when *Xerxes* came into *Europe*, it was an *Olympiad*; however it may differ from the *Technical Chronology* as it ſtands at preſent,

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(*u*) Pag. 379. (*x*) Pag. 380. (*y*) Pag. 381.

(*z*) επι μεν τεσσαρα ετεα ϖληρεα ϖαραρτεετο ϛρατιην τε και τα ϖροσφορα τη ϛρατιη, ϖεμπτω δε ετεϊ ανομενω εϛρατηλατεε χειρι μεγαλη ϖληθεος. *Pag.* 390.

THE *Olympic* Games, it is well known, were celebrated every *fifth* Year; or rather in the ſecond Month after the Completion of *four* Years, beginning on the 11th of the *Lunar* Month, and ending on the 15th, when the Moon was at the *Full* (*a*). In the Year before Chriſt 478, the Summer *Solſtice* was *June* the 27th; and the mean Time of the *Full* Moon, in the *Auguſt* following, was 27d. 8h. The *Olympic* Games therefore ended that Year *Auguſt* the 27th, by which Time *Xerxes* was advanced into *Theſſaly*, and had almoſt reached *Thermopylæ* (*b*).

AT this laſt Place he was met by the *Spartans* under *Leonidas*, whoſe March was delayed on account of their *Carnea* (*c*).

THE *Carnea* were a Feſtival held in particular Eſteem by the *Spartans*, during which, it ſeems from the Scholiaſt on *Thucydides* (*d*), they never fought. They began on the 13th of the Month *Carneus*, which anſwered to the *Athenian* Month *Metageitnion*, and was the 2d in the *Attic* Year. Their firſt was

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(*a*) *Meurſ.* Græcia feriata and Biſhop *Potter's* Archæol. Græc. Vol. i. pag. 446.

(*b*) Ην γαρ κατα τωυτο Ολυμπιας τουτοισι τοισι πρηγμασι συμπεσουσα. *Herod.* pag. 448.

(*c*) Μετα δε, Καρνεια γαρ σφι ην εμποδων, εμελλον ὁρταζοντες, και φυλακας λιποντες εν τῃ Σπαρτῃ, κατα ταχος βοηθεειν πανδημει. *Herod.* pag. 448. (*d*) Pag. 350. Edit. *Waſſe.*

Hecatombæon, and began upon the firſt *new Moon* after the Summer *Solſtice* (*f*). The mean Time of the *firſt* Conjunction after the Summer Solſtice this Year was *July* 13^{d}. 2^{h}. and the Conjunction following was *Auguſt* 11^{d}. 15^{h}. The 13th of the Month *Carneus* therefore that Year was about *Auguſt* the 24th, and the Battle at *Thermopylæ* was fought very early in *September*; ſoon after which *Athens* was burnt by the *Perſians*.

AND with this agrees *Plutarch* (*g*), who ſays that the Battle at *Salamis* was fought in the Month *Boëdromion*; which was the third in the *Attic* Year, and conſequently correſponded with Part of the *Julian September*, reckoned backwards.

IN the Month of *September* therefore, in the Year before *Chriſt* 478, if *Pliny* ſays true, there appeared a *Comet*; and about 12 Years after this, if the *Marbles* at *Oxford* may be depended on, the Stone fell into the *Ægoſpotamos* (*h*).

BUT if *Xerxes* began his March from *Sardis* on the 15th of *February*, as from the Eclipſe before given he muſt have done, then (conſidering the Slowneſs with which ſuch vaſt Armies muſt move) how much Time muſt unavoidably be ſpent in repairing his Bridge of Ships over the *Helleſpont*, broken, I imagine, by the

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(*f*) *Potter's* Archæolog. vol. i. pag. 463. and *Theod. Gaza* in *Petav.* Uranolog. p. 284. (*g*) In Vit. *Camil.* p. 138. (*h*) See N°. 73.

Winds and Storms ſo common about the *Equinoxes* (*i*) ; conſidering likewiſe that the Army ſtaid there a whole Month, either in paſſing over or repairing the Bridge, and that it would take up no ſmall Time to review ſo many Troops when all landed : we cannot well ſuppoſe, I ſay, from all theſe Particulars, that *Xerxes* could leave the *Helleſpont* before the latter End of *May*, or the Beginning of *June*.

And that this really was the Caſe appears from *Herodotus* (*k*). For *Xerxes*, he ſays, came into *Attica* in *three Months* after his paſſing the *Helleſpont*. And he further adds, that, between his taking of *Athens* and the final Ruin of it by *Mardonius* the Year following, was the Space of *Ten Months* (*l*) : And what Month that was in will appear hereafter.

(*i*) There is always a ſtrong Current ſetting out of the *Helleſpont*. *Dionyſius* calles it αγαῤῥοον ver. 325. δια το καταῤῥειν ειναι σφοδρα ſays *Euſtathius* there. It is obſerved by modern Travellers that at *Conſtantinople* there generally blows a North Wind ; ſo that, for want of a Southerly Wind, Ships have been known to lye a Month or two at the Mouth of the *Helleſpont*. See Miſcell. curioſ. vol. iii. pag. 38. And in the ſame Place we are informed, pag. 45, that the *Boſphorus* was frozen over by Means of vaſt Cakes of Ice that came down from the *Danube*, in the Reign of Sultan *Achmed*. And *Paulus Diaconus*, lib. xxii. relates the like to have happened in the Reign of *Conſtantine* ſurnamed *Copronymus*. The Moorings of *Xerxes's* Ships were cut to Pieces, perhaps, by ſuch Cakes of Ice drove down by a ſtrong Wind and Current.

(*k*) *Herod.* pag. 474. The Army, he ſays, ſpent, in paſſing over, 7 Days and 7 Nights without Intermiſſion. (*l*) Pag. 510.

As ſoon as the Loſs at *Thermopylæ* was heard, the *Peloponneſians*, as we are informed by *Herodotus* (*m*), were thrown into the utmoſt Conſternation, and the *Spartans* immediately marched, under the Conduct of *Cleombrotus*, the Brother of *Leonidas*, and began fortifying the *Iſthmus*. This muſt have been about the Middle of *September*. For the *Carnea* laſted *nine Days*, and therefore did not end, that Year, before *September* the 2d; and when theſe Forces ſet out for the *Iſthmus*, *Herodotus* ſays, the *Olympicks* and *Carnea* had been over *ſome Time* (*n*).

XERXES, upon the Loſs of his Fleet at *Salamis*, after ſome Conſultation determined to return into *Aſia*; and being eſcorted hy *Artabazus*, after a miſerable March, reached the *Helleſpont* in *forty five Days*. This muſt have been ſome Time in *November*.

MARDONIUS, with the Troops under his Command, continued all Winter in *Theſſaly*; where he was joined by *Artabazus*, who, after ſeeing *Xerxes* ſafe to the Sea-ſide, returned and beſieged *Potidæa* for three Months. This muſt have been ſome Time in *January*, or the Beginning of *February*.

THE Junction of theſe Forces, and the *Perſian* Fleet beginning to collect together at *Samos*, put the

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(*m*) Pag. 481.

(*n*) Ολυμπια δε και Καρνεια παροιχωκεε ηδη, Pag. 481.

Greeks likewiſe in Motion (*o*). Their Fleet, which conſiſted of 110 Ships, commanded by *Leutychides* a *Spartan* King, deſcended from *Hercules*, rendezvouzed at *Ægina*. Their Land Forces, which, upon *Mardonius's* Retreat into *Theſſaly*, ſeem to have gone into Winter-quarters at their reſpective Homes, were not, according to *Herodotus*, as yet collected together. Where the Place of Rendezvouz was appointed is not ſaid, but, moſt probably, for the *Peloponneſians* at leaſt, it was the *Iſthmus*, the fortifying of which ſeems now to have been entered upon again.

MARDONIUS ſends *Alexander*, King of *Macedon*, his Ambaſſador to *Athens*, with large Offers to the *Athenians*, in caſe they would break the Alliance and make a ſeparate Peace (*p*). The *Spartans*, on the other Hand, ſent Ambaſſadors at the ſame Time to diſſuade them from it. Upon receiving the *Athenians* Anſwer, which was the rejecting all Terms of Accommodation with the *Perſians*, *Mardonius* moved out of *Theſſaly* towards *Athens* (*q*).

As long as the *Athenians* had any hopes of Aſſiſtance from the *Spartans*, they continued in *Attica*, their own Country: but finding the *Spartans* neglect them, and that *Mardonius* was advanced towards them as far as *Bœotia*, they went over with their Families and Effects into the Iſland *Salamis* (*r*). At

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(*o*) Pag. 502. (*p*) Pag. 504. (*q*) Pag. 509. (*r*) Pag. 510.

the ſame Time they ſent Ambaſſadors to *Sparta* to complain of their ill Uſage, with ſome tacit Intimations, that they ſhould be obliged at laſt to enter into an Accommodation with the Enemy.

THE Ambaſſadors found the *Spartans* celebrating their *Hyacinthia* (*s*); a Feſtival which laſted 3 Days, and was kept in the *Attic* Month *Hecatombæon* (*t*), which, as before obſerved, began this Year *July* the 13th. The *Ephori* deferred giving any Anſwer to the *Athenian* Ambaſſadors for 10 Days, ſays *Herodotus*. But when they had determined to take their Leave and Return home the next Day, in the Night the *Spartans* ſent out a large Body conſiſting of 5000 *Spartans* and 35,000 *Helots*, to the *Iſthmus*, under the Command of *Pauſanias*, the Son of *Cleombrotus* who was by this Time dead. Theſe Forces therefore did not march till about *July* the 25th, by which Time *Mardonius* had burnt and ſacked *Athens* (*u*), *ten Months* after it had been fired by *Xerxes* before.

WHEN *Herodotus* informs us that *Cleombrotus* was now dead, he adds, that he died ſoon after his bringing back the Troops that had been fortifying the *Iſthmus*. And the Reaſon of his bringing them back, he ſays, was, "becauſe, while he was ſacrificing againſt

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(*s*) Λακεδαιμονιοι ὡρταζον ——— Και σφι ην Ὑακινθια. P. 511.

(*t*) See *Heſych.* in Ἑκατομβευς, *Meurſ.* Græc. feriat. 269. and *Potter's* Archæol. Græc. vol. i. p. 434.

(*u*) *Herod.* p. 513.

“ the *Perſian*, the *Sun was obſcured* (*x*) *in the Hea-*
“ *vens.*”

THE Word *Perſian* here is ambiguous, and may mean either *Xerxes* or *Mardonius*, but probably the latter of theſe two is intended. For the Forces under *Cleombrotus*, as we have ſeen, did not march to the *Iſthmus*, till after the Defeat of *Leonidas* and his Forces at *Thermopylæ*. And the Battles at *Salamis* and *Thermopylæ*, according to *Herodotus*, were fought at the ſame Time. The Sun therefore was not *obſcured* at any Sacrifice upon this Occaſion. When *Xerxes*, ſoon after this, retreated into *Aſia*, and *Mardonius* into Winter Quarters in *Theſſaly*, the *Greeks* all returned home, and the *Spartans* among the reſt. But this was not on account of any religious Terror.

IN the *February* following, when the *Peloponneſians* collected their Forces together at the *Iſthmus*, it was natural for the Commander in chief to ſacrifice according to the Devotion of thoſe Times. But the Sun being *obſcured* during that Solemnity, he might look on it as an unfortunate Omen; and as no Enemy was immediately at Hand, he would have Time and Opportunity ſufficient to lead back his Troops, that the Command might devolve on ſome General likely to prove more fortunate.

(*x*) Θυομενω οἱ επι τω Περσῃ, ὁ Ἡλιος αμαυρωθη εν τω ȣρανω. Pag. 512.

THIS ſeems to be the true State of this Affair from the only Account of it which is given by *Herodotus*. The Eclipſe in *February* this Year, already mentioned, agrees ſo exactly with the Time and Circumſtances of this Sacrifice, that I was ſtrongly inclined to hope I had found the Cauſe of that Darkneſs which is ſaid to have attended the Celebration of that Rite.

THIS would have been the more valuable, as the *Solar* Eclipſe in *February* the Year before would have agreed with the Time when *Xerxes* began his March from *Sardis*. And as no *two* Eclipſes beſides, about this Time, agree with the Circumſtances of theſe *two* Facts; it would have been a very ſtrong *aſtronomical* Argument, and almoſt *demonſtrative*, that *Xerxes* came into *Europe* the Year before *Chriſt* 478, and not 480 as commonly ſtated.

THE Latitude of *Corinth*, near which was the *Iſthmus*, fortified by the *Greeks*, is placed in *Varenius's* Geography in Latitude 38°. North, and in Longitude from *London* 22°. 25′. Eaſt, or in Time 1^{h}. 29′. 40″. Theſe Numbers, perhaps, are not entirely to be depended on; however, upon Suppoſition that they are right, I find by Calculation the Time of the viſible Conjunction at *Corinth* to have been at 1^{h}. 56′. 38″. or 56′. 38″. paſt 1 o'Clock in the Afternoon, *Feb.* 4th, in the vulgar Way of Reckoning.

The Semidiameter of the Penumbra was	31′.00″.
The neareſt viſible Diſtance of the Centers	34. 58.

So that the Sun was not eclipſed at *Corinth* at all.

As to the Eclipſe the Year before or *Feb.* the Year before *Chriſt* 478, I find the Time of the true Conjunction at *Greenwich* $15^{d}. 22^{h}. 32'. 53''$. And the Place of the Luminaries $10^{s}. 22^{\circ}. 57'$.

Semidiameter of the Sun	16′.	10′.
Semidiameter of the Moon	15.	18.
Semidiameter of the Penumbra	31.	28.

This Eclipſe, therefore, where greateſt, was *annular*.

It began at *Corinth* at 24′. 50″. paſt 12 at Noon, and ended at 26′. 13″. paſt 2 in the Afternoon: The Time of the greateſt Obſcuration was $1^{h}. 39'. 14''$.

And the Digits eclipſed 9. 32′.

In *Varenius* the Latitude of *Sardis* is made 38°. 10′. North, and its Longitude Eaſt from *London* in Time $1^{h}. 56'. 20''$. Upon which Suppoſition, I find that this Eclipſe began there at 26′. 37″. paſt 1 o'-Clock in the Afternoon, and ended at 27′. 29″. paſt 3. The Time of the greateſt Obſcuration was 31′. paſt 2.

And the Digits eclipſed 10. 7′.

From what hath been ſaid, it appears that no Eclipſe in the Spring, about this Time, was viſible at *Corinth*

Corinth or *Sardis*, except this of the Year 478. And then, if this was the Cauſe of the Darkneſs when *Cleomobrotus* was ſacrificing, the Darkneſs that terrified *Xerxes's* Army the Year before, it is poſſible, might have been owing to the Deſcent of the *Comet*, which from the Authorities above given, was ſeen towards the latter End of that Year. But as a Darkneſs cauſed in this Manner is unexampled in any other Hiſtory, it is more probable that the Darkneſs at *Sardis* was owing to this Eclipſe of 478. The other Darkneſs at the *Iſthmus* then, the next Year, muſt not have been the Effect of any *Eclipſe* at all, but muſt be aſcribed to ſome other accidental Cauſe that gave the Sun at the Time a *duſky* and *unuſual* Colour. Inſtances of this Kind, and at the Seaſon of the Year when this appears to have happened, are not wanting, and muſt occur to every one's Memory and Experience. And that this was the Caſe ſeems confirmed from the Account given of it by *Herodotus* himſelf, who only ſays that the Sun αμαυρωθη. On the other Hand, when he ſpeaks of the Eclipſe foretold by *Thales*, he ſays, την ημερην εξαπινης νυκτα γενεσθαι, *that the Day on a ſudden was turned into Night*. And ſpeaking of the Darkneſs under Conſideration at *Sardis*, he adds, αντι ημερης τε νυξ εγενετο, *the Day was turned into Night*.

The only Objection to be made againſt this Eclipſe of 478 is, that it was only *annular* where greateſt, and therefore will not anſwer the Deſcription given by *Herodotus*.

But to this it may be anſwered, that the Hiſtory of this Fact is delivered by *Herodotus*, not as a *Philoſopher*, but an *Hiſtorian* (*y*). That therefore the Words *as dark as Night* are not to be too ſtrictly urged, as implying abſolute Darkneſs, it being no ways uncommon, in *popular* Language, to make uſe of that Expreſſion for any *great* and *extraordinary Darkneſs*. Add to this, that *Herodotus* delivers this Fact, not as happening within the Compaſs of his own Knowledge and Obſervation, but as he had heard it related by others; for he could not have been above 6 Years old at the Time, according to what hath been above quoted from *Aulus Gellius*. And this, we know, is a Seaſon of Life, when Children make but few Reflexions, and when all Appearances are magnified. The Horror and Conſternation they were all in upon the Occaſion, he might well remember, and the tragical Death of *Pytheas's* Son muſt have been frequent Matter of Diſcourſe among his *Ionians*. But he knew nothing of the Doctrine of Eclipſes, as is evident from his ſpeaking of the Sun as *leaving his Place in the Heavens* and *diſappearing*.

It is certain, however, from this Account, that the Army loſt Sight of the Sun, but that might be owing

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(*y*) How poor a Philoſopher and Aſtronomer *Herodotus* was, appears from *his* Manner of accounting for the overflowing of the *Nile*, pag. 97.

to ſome other additional Cauſe beſides the Interpoſition of the *Moon's* Body.

FOR notwithſtanding what *Herodotus* ſays, that there were *no Clouds* (z), and that the Air was *very clear*, he muſt not be underſtood, perhaps, in too ſtrict a Manner. The Month of *February* is *moiſt*, and the Air might be full of Vapours, though not carried high enough, nor ſufficiently condenſed, to form *Clouds*.

IT is neither impoſſible therefore, nor improbable, that at the Time of this Eclipſe at *Sardis*, the watry Vapours, thus floating in the *Atmoſphere*, might condenſe by Degrees, as the Sun's Light and Heat decayed. By this Means, towards the *Middle* of the *Eclipſe*, they might form themſelves into a *thick Miſt*, which would *entirely hide* the Sun, *increaſe* the Darkneſs, and conſequently the *Fears* and *Aſtoniſhment* of an ignorant and ſuperſtitious Army.

I HAVE now finiſhed a very long and troubleſome Enquiry. My Deſign at firſt was nothing more than to ſee, if poſſible, what there was remarkable in the *falling* of a *Stone* into a River, and why the Ancients ſhould be ſo careful to tranſmit down to us a Fact of ſo ſeemingly ſmall Importance.

(z) *ȣτ' επινεφελων εοντων, αιϑριης τε τα μαλιϛα*, pag. 395.

BUT the Circumſtances ſaid to have attended its *Fall*—its being *predicted* by the ableſt *Philoſopher* of that Age—and at a Period ſo remarkable in Hiſtory, —all ſuggeſted that there muſt be ſome Miſtake at the Bottom, and that there muſt be ſomething more in the Story than appeared at firſt Sight. This inſenſibly led me farther than I expected, or intended.

THE Reſult however, I think, is plainly this. That *Xerxes* moſt probably came into *Europe* in the Year before *Chriſt* 478; *two Years* later than Chronologers have generally ſuppoſed him to have done, and that the *Olympiads,* of courſe, began *two Years* later than they have hitherto been placed.

IF what hath been here laid together ſhall at all contribute to the fixing or illuſtrating this Part of Hiſtory, I ſhall think my Time and Pains not ill beſtowed. A few *remarkable* Periods in Hiſtory, properly determined, is of great Service in *Chronology,* and this is as *remarkable* as any. It is about this Time only that the *Fabulous* Hiſtory of the *Greeks* ends, and their *True* one commences.

THE only Hiſtory before this Time, at leaſt deſerving the Name of Hiſtory, is that contained in the Books of the *Old Teſtament*. But this is nothing more than the Hiſtory of a ſingle People, and takes no Notice of that of other Nations, any farther than as the *Jewiſh* Affairs were mixed and connected with theirs. From that Connexion, however, we learn many uſeful Particulars relating to the Crowns of *Egypt*, *Babylon*, and *Nineveh*, which it is not my Deſign here to enlarge upon.

I SHALL only add farther with regard to the Expedition under Conſideraton, that it was of great Importance both in itſelf, and as to the Conſequences attending it. If it did not lay the Foundation of, it certainly increaſed, the mutual Jealouſy and Animoſity of the two powerful States at *Athens* and *Sparta*, which broke out at laſt in the long and ruinous *Peloponneſian* War. This likewiſe was made afterwards one of the main Pretences for *Alexander's* invading the *Perſians* (*a*), which, at the ſame Time that it ended with the Deſtruction of that extenſive Empire, opened the Way to all our Knowledge of the Eaſt.

LASTLY, this Expedition may ſerve for a ſtanding Monument to Princes. And ſuch an amazing Army, routed and deſtroyed by ſuch comparatively ſmall Forces, may teach them, how eaſily Providence can, and frequently doth, diſconcert the beſt laid Schemes, when projected for the Slavery and Oppreſſion of mankind.

(*a*) Επεισε τȣς Ελληνας ψηφισασθαι ϛρατηγον αυτοκρατορα της Ἑλλαδος ειναι τον Αλεξανδρον, και συϛρατευειν επι τȣς Περσας, ὑπερ ὧν εις τȣς Ἑλληνας εξημαρτον. Diod. Sic. p. 489.

FINIS.

ERRATA.

Pag. 2. lin. 13. *read* Ægoſpotamos
lin. 22. *read* probably
5. lin. 10. *read* where this
8. lin. 11. *before* Beam *add* "
9. lin. 18. *before* Xerxes *add* which
lin. 23. *dele* of
10. lin. 26 *after* p. *add* 242
13. lin. 10. *after* month *add* , *and after* March *dele* ,
lin. 13, *after* ♈ *add* ,
lin. 20. *after* indeed *add* ,

Pag. 15. lin. ult. *read* that
16. lin. 8. *after* Node *for* ♒ *read* ♊
lin. 11. *after* then *add* ,
lin. 19. *after* factum *add* ,
lin. 23. *after* in *add* ♒
17. lin. 19. *after* known *for* ; *put only* ,
23. lin. 1. *read* and
lin. 2. *read* the
lin. 3. *read* we